

ANALYTICAL REPORT

PREPARED FOR

Attn: Terri Choy
AECOM

1001 Bishop Street
Honolulu, Hawaii 96813

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JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

JOB NUMBER

580-122262-1

Eurofins Seattle

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



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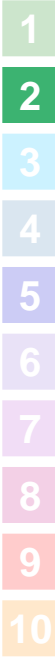


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Case Narrative

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-122262-1

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Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Red Hill - AFFF Assessment Sampling

Report Number: 580-122262-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Two samples were received on 1/14/2023 10:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.6° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GLYCOLS

Samples AF-RHMW04-WGN01LF-2301W2 (580-122262-1) and AF-RHMW06-WGN01LF-2301W2 (580-122262-2) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 01/16/2023 and 01/17/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: AECOM

Job ID: 580-122262-1

Project/Site: Red Hill - AFFF Assessment Sampling

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: AECOM

Job ID: 580-122262-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW04-WGN01LF-2301W2

Lab Sample ID: 580-122262-1

Date Collected: 01/12/23 09:50

Matrix: Water

Date Received: 01/14/23 10:25

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U M	5.0	1.1	mg/L			01/16/23 23:38	1

Client Sample Results

Client: AECOM

Job ID: 580-122262-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW06-WGN01LF-2301W2

Lab Sample ID: 580-122262-2

Date Collected: 01/12/23 11:20

Matrix: Water

Date Received: 01/14/23 10:25

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/17/23 00:01	1

QC Sample Results

Client: AECOM

Job ID: 580-122262-1

Project/Site: Red Hill - AFFF Assessment Sampling

Method: 8015C GLY - Glycols- Direct Injection (GC/FID)

Lab Sample ID: MB 680-759183/10

Matrix: Water

Analysis Batch: 759183

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/16/23 15:06	1

Lab Sample ID: LCS 680-759183/6

Matrix: Water

Analysis Batch: 759183

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	20.0	19.0		mg/L		95	50 - 150

Lab Sample ID: LCSD 680-759183/7

Matrix: Water

Analysis Batch: 759183

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	20.0	18.8		mg/L		94	50 - 150	1	50

Lab Sample ID: 580-122262-2 MS

Matrix: Water

Analysis Batch: 759183

Client Sample ID: AF-RHMW06-WGN01LF-2301W2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	3.0	U	20.0	19.9		mg/L		100	50 - 150

Lab Sample ID: 580-122262-2 MSD

Matrix: Water

Analysis Batch: 759183

Client Sample ID: AF-RHMW06-WGN01LF-2301W2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	3.0	U	20.0	15.5		mg/L		78	50 - 150	25	50

Lab Chronicle

Client: AECOM

Job ID: 580-122262-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW04-WGN01LF-2301W2

Lab Sample ID: 580-122262-1

Date Collected: 01/12/23 09:50

Matrix: Water

Date Received: 01/14/23 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	759183	JCK	EET SAV	01/16/23 23:38

Client Sample ID: AF-RHMW06-WGN01LF-2301W2

Lab Sample ID: 580-122262-2

Date Collected: 01/12/23 11:20

Matrix: Water

Date Received: 01/14/23 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	759183	JCK	EET SAV	01/17/23 00:01

Laboratory References:

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-122262-1

Laboratory: Eurofins Savannah

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-24
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
8015C GLY		Water	2-(2-Butoxyethoxy)ethanol

Sample Summary

Client: AECOM

Job ID: 580-122262-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-122262-1	AF-RHMW04-WGN01LF-2301W2	Water	01/12/23 09:50	01/14/23 10:25
580-122262-2	AF-RHMW06-WGN01LF-2301W2	Water	01/12/23 11:20	01/14/23 10:25

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Client Information		Lab P#: Elaine Walker FedEx		Carrier Tracking No(s): 2301W2AFE08	
Client Contact		E-Mail: Elaine.Walker@EurofinsET.com		State of Origin: Hawaii	
Company: AECOM		PWSID: 808-382-5654		Page 1 of 1	
Address: 1601 Bishop St. Suite 1600 City: Honolulu State, Zip: Hawaii 96813 Phone: 808-954-4512 / 770-331-0794 Email: Watson.Tanji@aecom.com / Mark.Kromis@aecom.com Project Name: CTO N6274223F0104 Site: RH5F		Due Date Requested: See subcontract TAT Requested (days): Rush - ASAP Compliance Project: Yes No PO #: WO #: Project #: 60697810 SSOW#: Sample Identification AF-RHW04-WGN01LF-2301W2		Analysis Requested 8015C_DAL_GL_DS/2-(2-butoxyethoxy)-ethanol Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No) Total Number of Containers	
Possible Hazard Identification Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> Radiological <input type="checkbox"/> Deliverable Requested: I, II, III, IV, Other (specify) Empty Kit Relinquished by: Tanjiazheng Nie		Sample Date: 1/12/23 Sample Time: 0950 Sample Type (C=Comp, G=grab): G Matrix (W=water, S=solid, O=soil, BT=Tissue, A=Air): W		Special Instructions/Note: 3	
Relinquished by: Tanjiazheng Nie		Date/Time: 1/12/23 1350		Company: AECOM	
Relinquished by: Tanjiazheng Nie		Date/Time: 1/12/23 1400		Company: AECOM	
Relinquished by: Tanjiazheng Nie		Date/Time: 1/12/23 10:25		Company: AECOM	
Custody Seals Intact: Yes No		Custody Seal No.: 46		Cooler Temperature(s) °C and Other Remarks:	

Chain of Custody Record

Client Information		Sampler: NEAH TURNER		Lab PM: Elaine Walker	Carrier Tracking No(s): 2301W2AFE409	COC No: 2301W2AFE409
Client Contact:		Phone: (781) 366-4777		E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: 1 of 1
Company: AECOM		PWSID:		Job #:		
Address: 1001 Bishop St. Suite 1600		Due Date Requested: see subcontract		Analysis Requested		
City: Honolulu		TAT Requested (days): Rush - ASAP		Total Number of Containers		
State, Zip: Hawaii 96813		Compliance Project: Δ Yes Δ No		Preservation Codes:		
Phone: 808-954-4512 / 770-331-0794		PO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-S Z - other (specify)		
Email: Watson.Tanji@aeom.com / Mark.Kromis@aeom.com		WO #:		Other:		
Project Name: CTO N6274223F0104		Project #: 60697810		Special Instructions/Note:		
Site: RHSF		SSOW#:		3		
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=wastewater, B=Trisul, A=Air)	Field Filtered Sample (Yes or No)
AF-RHMW06-WGN01LF-2301W2	01/12/2023	1120	G			8015C, DM, GL, D5/2-(2-butoxyethoxy)-ethanol
Possible Hazard Identification		Prelim data (Level 1or2)=see TAT above, DoD Stage 4 report standard IAT, AECOM EQULS EDD		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
<input checked="" type="checkbox"/> Non-Hazard	<input type="checkbox"/> Flammable	<input type="checkbox"/> Skin Irritant	<input type="checkbox"/> Poison B	<input type="checkbox"/> UTKBNW	<input type="checkbox"/> Radiological	<input type="checkbox"/> Return To Client
Deliverable Requested: I, II, III, IV, Other (specify)		Date:		<input type="checkbox"/> Archive For _____ Months		
Empty Kit Relinquished by:		Date:		Special Instructions/QC Requirements: DOD QSM project.		
Relinquished by: NEAH TURNER		Date/Time: 01/12/2023 / 1350		Method of Shipment:		
Relinquished by: Miranda Detarino		Date/Time: 01/12/2023 / 1400		Company: AECOM		
Relinquished by:		Date/Time:		Company:		
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 4-6		